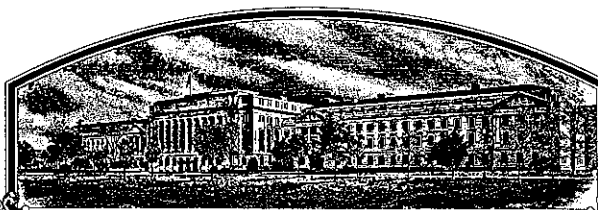


No.

8500141



THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

Land O' Lakes, Inc.

Whereas, THERE HAS BEEN PRESENTED TO THE

Secretary of Agriculture

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED NOVEL VARIETY OF SEXUALLY REPRODUCED PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THERETO IS, FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW.

NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF *eighteen* YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC REPLENISHMENT OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW, THE RIGHT TO EXCLUDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, IMPORTING IT, OR EXPORTING IT, OR USING IT IN PRODUCING A HYBRID OR DIFFERENT THEREFROM, TO THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION ACT 1942, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

SOYBEAN 'L2330'

In Testimony Whereof, I have hereunto set my hand and caused the seal of the Plant Variety Protection Office to be affixed at the City of Washington
this 31st day of January in
the year of our Lord one thousand nine hundred and eighty-six.

Attest:

Kenneth H. Harris
Commissioner
Plant Variety Protection Office
Agricultural Marketing Service

W. M. L.
Acting Secretary of Agriculture

Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). Information is held confidential until certificate is issued (7 U.S.C. 2426).

APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE

(Instructions on reverse)

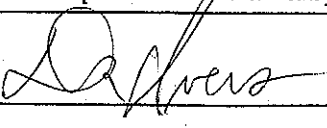
1. NAME OF APPLICANT(S) Land O'Lakes, Inc.		2. TEMPORARY DESIGNATION	3. VARIETY NAME L2330	
4. ADDRESS (Street and No. or R.F.D. No., City, State, and Zip Code) R. R. #2 Webster City, Iowa 50595		5. PHONE (Include area code) 515-543-4852		FOR OFFICIAL USE ONLY PVPO NUMBER 8500141
6. GENUS AND SPECIES NAME <u>Glycine max</u>	7. FAMILY NAME (Botanical) Leguminosae		FILING DATE 5/6/85 TIME 2:30 <input type="checkbox"/> A.M. <input checked="" type="checkbox"/> P.M.	
8. KIND NAME Soybean	9. DATE OF DETERMINATION January 1983		FEES RECEIVED AMOUNT FOR FILING \$ 1,800 DATE 5/6/85 AMOUNT FOR CERTIFICATE \$ DATE	
10. IF THE APPLICANT NAMED IS NOT A "PERSON," GIVE FORM OF ORGANIZATION (Corporation, partnership, association, etc.) Interregional Farmer Cooperative				
11. IF INCORPORATED, GIVE STATE OF INCORPORATION Minnesota			12. DATE OF INCORPORATION 1921	
13. NAME AND ADDRESS OF APPLICANT REPRESENTATIVE(S), IF ANY, TO SERVE IN THIS APPLICATION AND RECEIVE ALL PAPERS Dr. Drew Ivers R. R. 2, Answer Farm Webster City, Iowa 50595 PHONE (Include area code): 515-543-4848				
14. CHECK APPROPRIATE BOX FOR EACH ATTACHMENT SUBMITTED				
a. <input checked="" type="checkbox"/> Exhibit A, Origin and Breeding History of the Variety (See Section 52 of the Plant Variety Protection Act.) b. <input checked="" type="checkbox"/> Exhibit B, Novelty Statement c. <input checked="" type="checkbox"/> Exhibit C, Objective Description of the Variety (Request form from Plant Variety Protection Office.) d. <input type="checkbox"/> Exhibit D, Additional Description of the Variety e. <input checked="" type="checkbox"/> Exhibit E, Statement of Ownership				
15. DOES THE APPLICANT(S) SPECIFY THAT SEED OF THIS VARIETY BE SOLD BY VARIETY NAME ONLY AS A CLASS OF CERTIFIED SEED? (See Section 83(a) of the Plant Variety Protection Act.) <input type="checkbox"/> Yes (If "Yes," answer items 16 and 17 below) <input checked="" type="checkbox"/> No				
16. DOES THE APPLICANT(S) SPECIFY THAT THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS? <input type="checkbox"/> Yes <input type="checkbox"/> No		17. IF "YES" TO ITEM 16, WHICH CLASSES OF PRODUCTION BEYOND BREEDER SEED? <input type="checkbox"/> Foundation <input type="checkbox"/> Registered <input type="checkbox"/> Certified		
18. DID THE APPLICANT(S) FILE FOR PROTECTION OF THE VARIETY IN THE U.S. (this is first application for protection) <input type="checkbox"/> Yes (If "Yes," give date) <input checked="" type="checkbox"/> No				
19. HAS THE VARIETY BEEN OFFERED FOR SALE OR MARKETING IN THE U.S. OR OTHER COUNTRIES? U. S. A. PILOT SALES FOR TRIAL OBSERVATION OCCURRED DURING WINTER MONTHS OF 1984-85 R/S 5/29/85 <input checked="" type="checkbox"/> Yes (If "Yes," give names of countries and dates) <input type="checkbox"/> No				
20. The applicant(s) declare(s) that a viable sample of basic seeds of this variety will be furnished with the application and will be replenished upon request in accordance with such regulations as may be applicable. The undersigned applicant(s) is (are) the owner(s) of this sexually reproduced novel plant variety, and believe(s) that the variety is distinct, uniform, and stable as required in Section 41, and is entitled to protection under the provisions of Section 42 of the Plant Variety Protection Act. Applicant(s) is (are) informed that false representation herein can jeopardize protection and result in penalties.				
SIGNATURE OF APPLICANT 			DATE 15 April 85	
SIGNATURE OF APPLICANT			DATE	

EXHIBIT A

Origin and Breeding History of the Variety:

1. L2330 is a BC_1F_5 derived single plant selection from the cross:
MAX² X Altona¹.
2. MAX was crossed to Altona in February 1977 in our greenhouse and the BC_1 made the summer of 1977. BC_1F_2 seed was produced in the greenhouse the winter of 77-78 and BC_1F_3 seed harvested the fall of 1978. BC_1F_4 and BC_1F_5 seed was produced in Taiwan the winter of 1978-79, and BC_1F_5 single plants grown at our research farm in 1979. L2330 was selected as a BC_1F_5 derived plant-row by the single-seed-descent breeding method⁵ in 1980 and tested from 1981 thru 1984. Breeder's Seed was produced in 1983 and Foundation seed produced in 1984 at the LOL Research Farm. Certified seed is being produced in 1985 in Iowa.
3. L2330 may have up to 0.1% mechanical mixtures of unpredictable identity.
4. L2330 reached genetic stability at the BC_1F_5 generation, and is homozygous, homogeneous, and void of variants to the best of our knowledge.

EXHIBIT B

L2330 is most similar to the variety L4104 in that it has a very similar pedigree:

L2330 = MAX² X Altona
L4104 = MAX⁴ X Altona

and is very similar in appearance.

L2330 differs from L4104 primarily by maturity:

L2330 Relative Maturity = 23
L4104 Relative Maturity = 37

Approximately 14 days earlier

L2330 is 2.1 days later than Corsoy ^{79 N/S} 9 as documented by 59 reps of data from 20 environments over 4 years in Table 1. Whereas L4104 is 1.4 days earlier than William 82 as documented by 48 reps of data from 10 environments over 5 years in Table 2. LSD₀₅'s for maturity have been calculated for each variety each year to be approximately 1 day. Combined data across 4 and 5 years would reveal LSD₀₅'s far less than 1 day.

2330 also differs from L4104 for lodging and plant height. However, since the statistical documentation has not been provided, we are not declaring these two characters on this PVP application.

The maturity comparisons presented for each variety are from the appropriate areas of adaptation rather than a common unadapted area.

With this approach, the maturity difference is more realistic. The other approach would result in an amplified and exaggerated difference between the two varieties.

TABLE 1. "L2330" & "L2456" 4 YEAR AVERAGE ^{1/}

ENTRY	YIELD BU/A				MAT. DATE	LDG SCR	HT IN	CHL SCR	PRR 1,3	PRR SCR
	1981	1982	1983	1984						
L2330	69.5*	55.6*	43.7*	+46.0	26.4	2.8	38	2.7	R,R	1.0
L2456	69.5*	53.9	42.5	47.3	27.4	2.6	38	2.1	R,R	1.3
S1492	64.7	54.3	+44.2*	48.5	25.5	2.5	37	4.2	S	2.3
CORSOY 79	+61.8	+52.0	+41.0	+49.4	24.3	2.8	41	3.2	R,R	1.1
L4303	+66.3	51.2	+42.1	44.5	24.8	2.1	38	2.8	R	2.3
TEST \bar{X}	58.6	52.3	42.0	46.5	24.1					
TEST LSD .05	4.0	2.8	1.8	2.7						
TEST C.V. %	8.6	7.5	6.5	8.0						
1/TEST	MG IIE	EL-IIE	EL-IIE	EL-IIE	(* 1 LSD AND ** LSD'S ABOVE CORSOY 79)					
# REPS	12	15	17	15						
# LOC	4	5	6	5						
+ MEAN OF DOUBLED ENTRY					(WORTHINGTON, A. LEA, CHEROKEE, FT. DODGE, WAVERLY)					
L1771		53.8	44.2	+48.0						
L1808		54.8	45.8	+47.6						
HARDIN		53.5	42.2	45.5						
P1677		55.4	43.3	45.0						
L4404			44.0	47.4						
A1937			44.2	48.7						

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TABLE 2. "4104" "4106" 5 YEAR AVERAGE 1/

ENTRY	YIELD BU/A					MAT. DATE	LDG SCR	HT IN	CHL SCR	PRR 1,3	PRR SCR
	1980	1981	1982	1983	1984						
L4106	69.5*	72.9*	57.9	36.2	48.0	31.9	2.2	41	1.6	R	3.0
L4104	58.3	69.7*	57.1	38.6	50.8*	30.2	2.3	41	3.3	R,R	1.5
WILLIAMS 82	61.6	67.2	55.1	37.1	47.4	31.6	2.1	41	3.4	R,R	1.4
TEST \bar{X}	58.0	69.2	55.9	37.6	49.8						
TEST LSD .05	5.7	5.1	3.4	2.4	3.1						
TEST C.V. %	8.7	6.6	7.7	8.0	7.8						
1/TEST	MGIIIL	ELIII	ELIII	ELIII	ELIII	(* 1 LSD ABOVE WILLIAMS 79)					
# REPS	6	6	12	12	12						48
# LOC	2	2	2	2	2						10
A3127		72.2	57.9	42.8*	51.5*						
PELLA				41.8*	53.1*						

(PERRY, PELLA)

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U.S. DEPARTMENT OF AGRICULTURE
 AGRICULTURAL MARKETING SERVICE
 LIVESTOCK, MEAT, GRAIN & SEED DIVISION
 PLANT VARIETY PROTECTION OFFICE
 BELTSVILLE, MARYLAND 20705

EXHIBIT C
 (Soybean)

OBJECTIVE DESCRIPTION OF VARIETY
 SOYBEAN (*Glycine max* L.)

NAME OF APPLICANT(S) Land O'Lakes, Inc.	TEMPORARY DESIGNATION	VARIETY NAME L2330
ADDRESS (Street and No., or R.F.D. No., City, State, and Zip Code) R. R. #2 Webster City, Iowa 50595		FOR OFFICIAL USE ONLY PVPO NUMBER 8500141

Choose the appropriate response which characterizes the variety in the features described below. When the number of significant digits in your answer is fewer than the number of boxes provided, place a zero in the first box when number is 9 or less (e.g.,).

1. SEED SHAPE:



1 = Spherical (L/W, L/T, and T/W ratios = < 1.2)

3 = Elongate (L/T ratio > 1.2; T/W = < 1.2)

2 = Spherical Flattened (L/W ratio > 1.2; L/T ratio = < 1.2)

4 = Elongate Flattened (L/T ratio > 1.2; T/W > 1.2)

2. SEED COAT COLOR: (Mature Seed)

1 = Yellow

2 = Green

3 = Brown

4 = Black

5 = Other (Specify) _____

3. SEED COAT LUSTER: (Mature Hand Shelled Seed)

1 = Dull ('Corsoy 79'; 'Braxton')

2 = Shiny ('Nebsoy'; 'Gasoy 17')

4. SEED SIZE: (Mature Seed)

Grams per 100 seeds

5. HILUM COLOR: (Mature Seed)

1 = Buff

2 = Yellow

3 = Brown

4 = Gray

5 = Imperfect Black

6 = Black

7 = Other (Specify) _____

6. COTYLEDON COLOR: (Mature Seed)

1 = Yellow

2 = Green

7. SEED PROTEIN PEROXIDASE ACTIVITY:

1 = Low

2 = High

8. SEED PROTEIN ELECTROPHORETIC BAND:

1 = Type A (SP1^a)2 = Type B (SP1^b)

9. HYPOCOTYL COLOR:

1 = Green only ('Evans'; 'Davis')

2 = Green with bronze band below cotyledons ('Woodworth'; 'Tracy')

3 = Light Purple below cotyledons ('Beeson'; 'Pickett 71')

4 = Dark Purple extending to unifoliate leaves ('Hodgson'; 'Coker Hampton 266A')

10. LEAFLET SHAPE:

1 = Lanceolate

2 = Oval

3 = Ovate

4 = Other (Specify) _____

11. LEAFLET SIZE:

☐ 21 = Small ('Amsoy 71'; 'A5312')
3 = Large ('Crawford'; 'Tracy')

2 = Medium ('Corsoy 79'; 'Gasoy 17')

12. LEAF COLOR:

☐ 21 = Light Green ('Weber'; 'York')
3 = Dark Green ('Gnome'; 'Tracy')

2 = Medium Green ('Corsoy 79'; 'Braxton')

13. FLOWER COLOR:

☐ 2

1 = White

2 = Purple

3 = White with purple throat

14. POD COLOR:

☐ 2

1 = Tan

2 = Brown

3 = Black

15. PLANT PUBESCENCE COLOR:

☐ 2

1 = Gray

2 = Brown (Tawny)

16. PLANT TYPES:

☐ 21 = Slender ('Essex'; 'Amsoy 71')
3 = Bushy ('Gnome'; 'Govan')

2 = Intermediate ('Amcor'; 'Braxton')

17. PLANT HABIT:

☐ 3

1 = Determinate ('Gnome'; 'Braxton')

2 = Semi-Determinate ('Will')

3 = Indeterminate ('Nebsoy'; 'Improved Pelican')

18. MATURITY GROUP:

☐ 0 ☐ 5

1 = 000

2 = 00

3 = 0

4 = I

5 = II

6 = III

7 = IV

8 = V

9 = VI

10 = VII

11 = VIII

12 = IX

13 = X

19. DISEASE REACTION: (Enter 0 = Not Tested; 1 = Susceptible; 2 = Resistant)

BACTERIAL DISEASES:

☐ 0Bacterial Pustule (*Xanthomonas phaseoli* var. *sojensis*)☐ 0Bacterial Blight (*Pseudomonas glycinea*)☐ 0Wildfire (*Pseudomonas tabaci*)

FUNGAL DISEASES:

☐ 0Brown Spot (*Septoria glycines*)Frogeye Leaf Spot (*Cercospora sojae*)☐ 0

Race 1

☐ 0

Race 2

☐ 0

Race 3

☐ 0

Race 4

☐ 0

Race 5

☐ 0

Other (Specify)

☐ 0Target Spot (*Corynespora cassicola*)☐ 0Downy Mildew (*Peronospora trifoliorum* var. *manshurica*)☐ 0Powdery Mildew (*Microspheera diffusa*)☐ 0Brown Stem Rot (*Cephalosporium gregatum*)☐ 0Stem Canker (*Diaporthe phaseolorum* var. *caulivora*)

19. DISEASE REACTION: (Enter 0 = Not Tested; 1 = Susceptible; 2 = Resistant) (Continued)

FUNGAL DISEASES: (Continued)

☐ 0 Pod and Stem Blight (*Diaporthe phaseolorum* var. *sojae*)
☐ 0 Purple Seed Stain (*Cercospora kikuchii*)
☐ 0 Rhizoctonia Root Rot (*Rhizoctonia solani*)
 Phytophthora Rot (*Phytophthora megasperma* var. *sojae*)
☐ 2 Race 1 ☐ 2 Race 2 ☐ 2 Race 3 ☐ 2 Race 4 ☐ 1 Race 5 ☐ 1 Race 6 ☐ 1 Race 7
☐ 1 Race 8 ☐ 1 Race 9 ☐ 2 Other (Specify) 10, 12, 14-16, 18-21

VIRAL DISEASES:

☐ 0 Bud Blight (Tobacco Ringspot Virus)
☐ 0 Yellow Mosaic (Bean Yellow Mosaic Virus)
☐ 0 Cowpea Mosaic (Cowpea Chlorotic Virus)
☐ 0 Pod Mottle (Bean Pod Mottle Virus)
☐ 0 Seed Mottle (Soybean Mosaic Virus)

NEMATODE DISEASES:

Soybean Cyst Nematode (*Heterodera glycines*)

☐ 1 Race 1 ☐ 0 Race 2 ☐ 1 Race 3 ☐ 0 Race 4 ☐ 0 Other (Specify) _____
☐ 0 Lance Nematode (*Hoplolaimus Colonus*)
☐ 0 Southern Root Knot Nematode (*Meloidogyne incognita*)
☐ 0 Northern Root Knot Nematode (*Meloidogyne Hapla*)
☐ 0 Peanut Root Knot Nematode (*Meloidogyne arenaria*)
☐ 0 Reniform Nematode (*Rotylenchulus reniformis*)
☐ 0 OTHER DISEASE NOT ON FORM (Specify): _____

20. PHYSIOLOGICAL RESPONSES: (Enter 0 = Not Tested; 1 = Susceptible; 2 = Resistant)

☐ 2 Iron Chlorosis on Calcareous Soil
☐ 0 Other (Specify) L2330 has a chlorosis ration of 2.7.

21. INSECT REACTION: (Enter 0 = Not Tested; 1 = Susceptible; 2 = Resistant)

☐ 0 Mexican Bean Beetle (*Epilachna varivestis*)
☐ 0 Potato Leaf Hopper (*Empoasca fabae*)
☐ 0 Other (Specify) _____

22. INDICATE WHICH VARIETY MOST CLOSELY RESEMBLES THAT SUBMITTED.

CHARACTER	NAME OF VARIETY	CHARACTER	NAME OF VARIETY
Plant Shape	L4104	Seed Coat Luster	L4104
Leaf Shape	"	Seed Size	"
Leaf Color	"	Seed Shape	"
Leaf Size	"	Seedling Pigmentation	"

23. GIVE DATA FOR SUBMITTED AND SIMILAR STANDARD VARIETY: Paired Comparison Data

VARIETY	NO. OF DAYS MATURITY	PLANT LODGING SCORE	CM PLANT HEIGHT	LEAFLET SIZE		SEED CONTENT		SEED SIZE G/100 SEEDS	NO. SEEDS/ POD
				CM Width	CM Length	% Protein	% Oil		
L2330 Submitted	116	2.8	96	7.0	13.1	40.2	20.0	18	3
L4104 Name of Similar Variety	130	2.3	104	7.4	13.5	41.15	21.0	17	3

PUBLICATIONS USEFUL AS REFERENCE AIDS FOR COMPLETING THIS FORM:

1. Caldwell, B.E., ed. 1973. Soybeans: Improvement, Production, and Uses. Amer. Soc. Agron. Monograph No. 16.
2. Buttery, B.R. and R.I. Buzzell. 1968. Peroxidase activity in seeds of soybean varieties. Crop Sci., 8: 722-725.
3. Hymowitz, T. 1973. Electrophoretic analysis of SBTI-A₂ in the USDA soybean germplasm collection. Crop Sci., 13: 420-421.
4. Payne, R.C. and L.F. Morris. 1976. Differentiation of soybean cultivars by seedling pigmentation patterns. J. Seed Technol. 1: 1-19.

EXHIBIT E

Statement of Ownership

L2330 is exclusively owned by Land O'Lakes, Inc. in lieu of the fact that the variety was developed exclusively by the LOL Soybean Breeding Project stationed at the LOL Answer Farm, RR #2, Webster City, Iowa 50595.

L2330 was developed from a cross of MAX² X Altona made by Dr. Drew Ivers (LOL Research Geneticist) and under his direction and at LOL expense advanced to and tested as a variety. This variety will be sold by LOL to its farmer-member-owners and the general public with full sales release in 1986.